Response: How to Use a Window of Opportunity

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Margaret Chisolm: It's accepted that pregnancy is a window of opportunity when women are highly motivated to make behavioral changes. There's a higher spontaneous quit rate among pregnant smokers than in the general population of smokers.

Most of the women in our program are extremely motivated for treatment. In part, primarily, they are concerned about the fetus. Those who are abusing illegal substances also know that they might lose custody of their child if they continue to do so during their pregnancy.

Victoria Coleman-Cowger: I understand why some States want to protect children from the lifestyles of drug-abusing parents. At the same time, the policy becomes a barrier to women getting treatment and receiving other needed services as well as to participating in research studies focused on this population. Women are less likely to disclose drug abuse if they know it means that their children might be taken away.

Chisolm: Most of the women we treat at the Johns Hopkins Center for Addiction and Pregnancy use illicit opioids. When I arrived, I was struck by how many of them smoked. That raised questions for me. What was the relative risk of smoking versus the other dependencies we were treating? Did smoking make it more difficult for them to stop using other substances? Conversely, would smoking cessation jeopardize their recovery?

Coleman-Cowger: As a Research Scientist at Chestnut Health Systems, I recognize how difficult it is to study these issues. For longitudinal studies, researchers need to recruit large numbers of mothers and children so that they can control for all the potential influences on outcomes. Then they need to follow the participants for years or decades to see what outcomes occur.

Both requirements are harder when you're talking about illegal substances and lives that may be chaotic. We know more about prenatal tobacco and alcohol exposure than about other prenatal exposures in part because women don't face legal consequences if they acknowledge that they smoke or drink.

Chisolm: It's because of those difficulties that I'm not yet convinced that prenatal exposures cause all the behavioral problems with which studies associate them. For example, a high percentage of women in our program had ADHD diagnosed when they were children themselves. To me, that suggests that genes, rather than drugs, may be at least part of the reason why their children tend to have behavioral problems. The challenge of establishing causal relationships with prenatal exposures increases as children get older and accumulate more environmental exposures and begin to express genetic vulnerabilities that might influence their behavior.

So we tell women that it's better not to smoke or use other drugs during pregnancy. We know that avoiding substances will give them better birth outcomes, because the evidence is conclusive that drug exposures cause pregnancy complications and neonatal morbidity and mortality. But we don't say that smoking is going to increase their children's risk of ADHD or anything like that. I think the evidence is less compelling for those more distal outcomes.

Treatment motivation and interventions

Coleman-Cowger: Contingency management (CM) has been shown to very effectively reduce drug use. I'm planning to use it with pregnant and postpartum smokers in a pilot study of postpartum continuing care, giving Babies R Us gift cards in escalating amounts for each successive negative urine test.

Chisolm: There is a lot of potential with CM to improve outcomes and to save health costs. CM economics probably work best for comprehensive health systems. Although the CM vouchers cost their substance abuse treatment components, their other components save by having to treat fewer or less serious health consequences of abuse. A stand-alone substance abuse program, however, might lay out for the vouchers but not get any savings down the line.

Coleman-Cowger: I don't believe there have been many studies of CM with long-term followup. I've seen studies in which some effects have been sustained after

3 months, but none looking at outcomes for longer periods of time.

Chisolm: I don't consider myself an expert in CM, but the evidence suggests that as soon as you stop the reinforcement, the behavior reverts to what it was before. For example, a study here at Johns Hopkins gave contingency rewards to promote abstinence among postpartum women who had been heavy users of cocaine during their pregnancies. The women maintained close to 80 percent abstinence throughout the 18 months that the rewards were being given, but the rate fell to around 20 percent within a few months after the rewards were stopped.

We have just finished a study in which we measured drug-dependent mothers' carbon monoxide levels on breathalyzer tests. We are looking to see whether giving these mothers feedback on these results might be a powerful reinforcer for reducing smoking, as it is in non-drug-dependent pregnant women. If so, that would be a good low-cost approach to promote abstinence during pregnancy in this population, too.

Coleman-Cowger: Dr. Minnes' endorsement of nicotine replacement therapy (NRT) for pregnant women who are heavy smokers is in line with the recommendation of the American College of Obstetricians and Gynecologists that pharmacological agents be considered when a pregnant woman is otherwise unable to quit smoking. The efficacy studies that have been completed so far haven't proved that NRT makes a difference in cessation rates for pregnant women. However, the results have been mixed and more favorable with respect to reducing use.

Chisolm: That's right. One of the studies that was halted because cessation rates didn't improve actually showed reductions in the number of cigarettes per day. Neonatal outcomes improved as well.

NRT helps nonpregnant women quit smoking. Pregnant women might require higher doses than were used in these trials, since they metabolize the drug twice as fast. However, nobody really wants to give pregnant women higher doses of nicotine since it's a known neuroteratogen.

As Dr. Minnes notes, bupropion is a category C drug, meaning that it has produced some evidence of fetal harm in animal studies and may pose a risk in humans. However, I've talked to many obstetricians and providers who use bupropion off-label as an alternative to NRT for their pregnant patients. This medication has proven efficacy for smoking cessation and as an antidepressant, and perhaps could be the medication of choice for depressed pregnant women who smoke. Certainly, more investigation is warranted.

Coleman-Cowger: Postpartum continuing care is important. Having a newborn is a very high stress time and one of the biggest times of risk for use of any substance. Without continuing to support women as intensively as they were supported during pregnancy, interventions would be very unlikely to have a sustained effect.

Some 80 percent of women who quit smoking during pregnancy relapse within the first year after they've given birth. That's unfortunate for both the woman and her infant, because nicotine is transmitted indirectly at very high rates in mothers' milk, and directly through second-hand smoke, producing adverse outcomes.

Chisolm: Substance-using pregnant women have a high incidence of comorbid mood and anxiety disorders. Up to 50 percent of the women in our program have a DSM-diagnosable mood and/or anxiety disorder. Unless they get intensive treatment for these disorders postpartum, they are ripe for relapse.

Coleman-Cowger: Partner interventions are an important component of care with a substance-using population, particularly with smokers, due to the likelihood that the partner may also be engaging in substance use or other enabling behaviors that could trigger relapse. The lack of focus on partners in the existing literature might be one reason why the interventions Dr. Minnes reports weren't more efficacious.

Chisolm: Pregnant women's smoking is still not usually a targeted problem in drug abuse treatment, even though the links to significant adverse consequences for the mother and child are very clear. It's not unusual for staff to be less interested in addressing tobacco use among their patients because a number of staff may be in recovery and smoke themselves, or are sympathetic to smoking. This is a situation in which we really need to address staff attitudes.